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Application Number: 10/519,216  
Reply Dated: October 3, 2008  
Office Action Dated: June 3, 2008

### LISTING OF THE CLAIMS

1. (currently amended) A fibrous protein-immobilization system composition comprising:

a nanofiber comprising fiber-forming material;

a protein attached to said the fiber-forming material;

wherein the nanofiber includes at least one functional group suitable to permit the attachment of the protein; and wherein the at least one function group is contained within a portion of the fiber-forming material.

2. (cancelled)

3. (currently amended) The fibrous protein-immobilization system composition, as set forth in claim 1, wherein said the fiber-forming materials are linear polymers selected from the group consisting of homopolymers and copolymers of  $\alpha$ -olefins,  $\alpha,\beta$ -ethylenically unsaturated carboxylic acids, vinyl aromatics, ethyl ethers, and combinations thereof.

4. (currently amended) A fibrous protein-immobilization system composition comprising:

a nanofiber comprising fiber-forming material;

a protein attached to the fiber-forming material;

wherein the nanofiber includes at least one functional group suitable to permit the attachment of the protein; and wherein the at least one function group is contained within a portion of the fiber-forming material, and wherein the ~~The fibrous protein-immobilization system composition, as set forth in claim 1, wherein said protein is attached directly to said the fiber-forming material.~~

Application Number: 10/519,216  
Reply Dated: October 3, 2008  
Office Action Dated: June 3, 2008

5. (currently amended) The fibrous protein-immobilization system composition, as set forth in claim 4, wherein said the protein includes at least one functional group that can react with the at least one functional group on the nanofiber comprising fiber-forming material.

6. (currently amended) The fibrous protein-immobilization system composition, as set forth in claim 1, wherein said the protein is attached indirectly to said the fiber-forming material by an inert coupling agent.

7. (currently amended) The fibrous protein-immobilization system composition, as set forth in claim 6, wherein said the protein includes at least one functional group that can react with a corresponding functional group on said the inert coupling agent.

8. (currently amended) The fibrous protein-immobilization system composition, as set forth in claim 1, wherein said the protein is a natural or synthetic protein.

9. (currently amended) The fibrous protein-immobilization system composition, as set forth in claim 8, wherein said the protein is selected from the group consisting of enzymes, hormones, toxins, antibodies, antigens, lectins, structural proteins, signal proteins, transport proteins, receptors, and blood factors.

10. (currently amended) A fibrous protein-immobilization system composition comprising:

a nanofiber comprising fiber-forming material;

a protein attached to the fiber-forming material;

Application Number: 10/519,216  
Reply Dated: October 3, 2008  
Office Action Dated: June 3, 2008

wherein the nanofiber includes at least one functional group suitable to permit the attachment of the protein; and wherein the at least one function group is contained within a portion of the fiber-forming material, and wherein the ~~The fibrous protein-immobilization system composition, as set forth in claim 1, wherein said protein is an enzyme selected from the group consisting of chymotrypsin, cytochrome C, trypsin, subtilisin, horseradish peroxidase, soybean peroxidase, and glucose oxidase.~~

11. (currently amended) A method for synthesizing a fibrous protein-immobilization system comprising the steps of:

synthesizing a nanofiber comprising a fiber-forming material, wherein the nanofiber includes at least one functional group suitable to permit the attachment of a protein and wherein the at least one function group is contained within a portion of the fiber-forming material; and

attaching the protein to said the fiber-forming material.

12. (currently amended) A method for synthesizing a fibrous protein-immobilization system comprising the steps of:

synthesizing a nanofiber comprising a fiber-forming material, wherein the nanofiber includes at least one functional group suitable to permit the attachment of a protein and wherein the at least one function group is contained within a portion of the fiber-forming material; and

attaching the protein to the fiber-forming material ~~The method of claim 11,~~ wherein said the protein is attached to said the fiber-forming material before said the fiber-forming material is synthesized into a nanofiber.

13. (currently amended) The method of claim 11, wherein said the protein is attached to said the fiber-forming material after said the fiber-forming material is synthesized into a nanofiber.

Application Number: 10/519,216  
Reply Dated: October 3, 2008  
Office Action Dated: June 3, 2008

14. (currently amended) A method for synthesizing a fibrous protein-immobilization system comprising the steps of:

synthesizing a nanofiber comprising a fiber-forming material, wherein the nanofiber includes at least one functional group suitable to permit the attachment of a protein and wherein the at least one function group is contained within a portion of the fiber-forming material; and

attaching the protein to the fiber-forming material ~~The method of claim 11,~~  
wherein ~~said the~~ step of synthesizing includes electrospinning a solution of ~~said the~~ fiber-forming material to produce the nanofiber.

15. (currently amended) The method of claim 11, wherein the step of attaching includes attaching ~~said the~~ protein to a coupling agent and ~~said the~~ coupling agent to ~~said the~~ fiber-forming material.

16. (currently amended) A method for synthesizing a fibrous protein-immobilization system comprising the steps of:

synthesizing a nanofiber comprising a fiber-forming material, wherein the nanofiber includes at least one functional group suitable to permit the attachment of a protein and wherein the at least one function group is contained within a portion of the fiber-forming material; and

attaching the protein to the fiber-forming material ~~The method of claim 11,~~  
wherein ~~said the~~ protein is an enzyme and further comprises the step of attaching a cofactor to ~~said the~~ fiber-forming material.

17. (currently amended) The method of claim 16, further comprising the step of presenting ~~said the~~ enzyme to ~~said the~~ cofactor by incorporating ~~said the~~ enzyme into a fluid that contacts ~~said the co-factor-cofactor~~.

Application Number: 10/519,216  
Reply Dated: October 3, 2008  
Office Action Dated: June 3, 2008

18. (currently amended) A fibrous protein-immobilization system composition comprising:

a nanofiber comprising fiber-forming material;

a protein attached to the fiber-forming material;

wherein the nanofiber includes at least one functional group suitable to permit the attachment of the protein; and wherein the at least one function group is contained within a portion of the fiber-forming material, and ~~The fibrous protein-immobilization system composition, as set forth in claim 1,~~ wherein the protein is contained within the fiber-forming material.

19. (currently amended) A method for synthesizing a fibrous protein-immobilization system comprising the steps of:

synthesizing a nanofiber comprising a fiber-forming material, wherein the nanofiber includes at least one functional group suitable to permit the attachment of a protein and wherein the at least one function group is contained within a portion of the fiber-forming material; and

attaching the protein to the fiber-forming material ~~The method of claim 11,~~ wherein the protein is contained within the fiber-forming material.